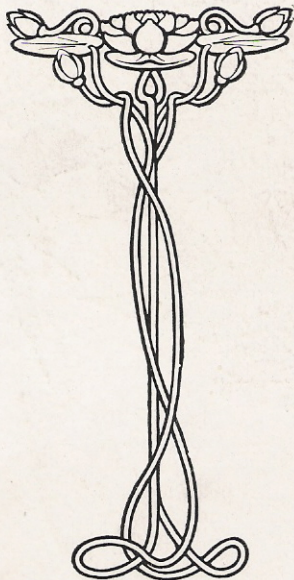


# Cannabis Americana

(Cannabis Sativa)

Identical with Cannabis Indica.



From the Laboratories of  
**PARKE, DAVIS & CO.**  
Detroit, Mich., U. S.A.





# Cannabis Americana

(Cannabis Sativa Grown in America)

## DESCRIPTIVE



MUCH has been written relative to the comparative activity of Cannabis Sativa grown in different climates (Cannabis Indica, Mexicana and Americana). It has been generally assumed that the American-grown drug was practically worthless therapeutically, and that Cannabis Sativa grown in India must be used if one would obtain physiologically active preparations.

Furthermore, it has been claimed that the best Indian drug is that grown especially for medicinal purposes, the part used consisting of the flowering tops of the unfertilized female plants, care being taken during the growing of the drug to weed out the male plants. According to our experience, this is an erroneous notion, as we have repeatedly found that the Indian drug which contains large quantities of seed is fully as active as the drug which consists of the flowering tops only, provided the seed be removed before percolation.

Several years ago we began a systematic investigation of American grown Cannabis Sativa. Samples from a number of localities were obtained and carefully investigated. From these samples fluid and solid extracts were prepared according to the Pharmacopœial method, and carefully tested upon animals for physiological activity, and eventually they were standardized by physiological methods. Repeated tests have convinced us that Cannabis Americana properly grown and

cured is fully as active as the best Indian drug, while on the other hand we have frequently found Indian Cannabis to be practically inert.

Before marketing preparations of Cannabis Americana, however, we placed specimens of the fluid and solid extracts in the hands of experienced clinicians for practical test; and from these men, all of whom had used large quantities of Cannabis Indica in practice, we have received reports which affirm that they have been unable to determine any therapeutic difference between Cannabis Americana and Cannabis Indica. We are, therefore, of the opinion that Cannabis Americana will be found equally as efficient as, and perhaps more uniformly reliable than, Cannabis Indica obtained from abroad, since it is evident that with a source of supply at our very doors proper precautions can be taken to obtain crude drug of the best quality.

### N O M E N C L A T U R E

The proper botanical name of the drug under consideration is Cannabis Sativa. The Indian plant was formerly supposed to be a distinct species *per se*, but botanists now consider the two plants to be identical. The old name of Cannabis Indica, however, has been retained in medicine. Cannabis Indica simply means Cannabis Sativa grown in the Indies, and Cannabis Americana means Cannabis Sativa grown in America. Its introduction into Western medicine dates from the beginning of the last century, but it has been used as an intoxicant in Asiatic countries from time immemorial, and under the name of "hashish," "bhang," "ganja" or "charas," is habitually consumed by upwards of two hundred millions of human beings.



## PHYSIOLOGICAL ACTION

The physiological action of Cannabis Americana is precisely the same as that of Cannabis Indica. The effects of this drug are said to be due chiefly to its action upon the central nervous system. It first produces a state of excitement similar to that of the initial stage of acute alcoholism. This excitement of the motor areas and other lower centres in the brain, according to W. E. Dixon, of the University of Cambridge, "is not the result of direct stimulation of these, but is due to depression of the highest and controlling centres. At all events there is a depression of the highest centres, and this is shown by diminished efficiency in the performance of mental work, by inability to concentrate attention, and by feeble judgment." In lower animals the effects of Cannabis Indica resemble those in man and present the same variations. A stage of exaltation with increased movements is sometimes present, and is followed by depression, lassitude and sleep. Reflex excitability is first increased and then diminished. Cannabis Indica differs from opium in producing no disturbance of digestion and no constipation. The heart is generally accelerated in man when the drug is smoked. Its intravenous injection into animals slows the pulse, partly through inhibitory stimulation and partly through direct action upon the heart muscle. The pupil is generally somewhat dilated. Death from acute poisoning is extremely rare, and recovery has occurred after enormous doses. The continued abuse of hashish by natives of the East sometimes leads to mania and dementia, but does not cause the same disturbance of nutrition that opium does; and the habitual use of small quantities, which is almost universal in some Eastern countries, does not appear to be detrimental to health.

## T H E R A P E U T I C    I N D I C A T I O N S

Cannabis Americana is employed for the same medicinal purposes as Cannabis Indica, which is frequently used as a hypnotic in cases of sleeplessness, in nervous exhaustion, and as a sedative in patients suffering from pain. Its greatest use has perhaps been in the treatment of various nervous and mental diseases, although it is found as an ingredient in many cough mixtures. In general, Cannabis Americana can be used when a mild hypnotic or sedative is indicated, as it is said not to disturb digestion, and it produces no subsequent nausea and depression. It is of use in cases of migraine, particularly when opium is contraindicated. It is recommended in paralysis agitans to quiet the tremors, in spasm of the bladder, and in sexual impotence not the result of organic disease, especially in combinations with nux vomica and ergot.

## D O S A G E

Extractum Cannabis Americanæ, 0.01 gramme (1-5 grain).

Fluidextractum Cannabis Americanæ, 0.05 Cc. (1 minim).

The dosage of Cannabis Americana is the same as that of Cannabis Indica, as from our experiments we find there is no therapeutic difference in the physiological action of the two drugs.

## A D V A N T A G E S

Cannabis Sativa, when grown in the United States (Cannabis Americana) under careful precautions, is found to be fully as active as the best imported Indian-grown Cannabis Sativa, as shown by laboratory and clinical tests. The advantages of using carefully prepared solid and fluid extracts of the home-grown drug are apparent when it is considered that every step of the process, from the planting of the drug to the final marketing of the finished product, is under the supervision of



experts. The imported drug varies extremely in activity and much of it is practically inert or flagrantly adulterated.

### P A C K A G E S

Extractum Cannabis Americanæ is put up in jars containing one ounce; Fluidextractum Cannabis Americanæ is put up in bottles of one-quarter pint and one pint, respectively.

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# A Pharmacological Study of *Cannabis Americana* (*Cannabis* *Sativa*)

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FROM several samples of *Cannabis Americana* fluid extracts and solid extracts were prepared according to the U. S. P., and were tested upon animals for physiological activity.

The method of assay, which has previously been called to the attention of this Society, is that which one of us (Houghton) devised and has employed for the past twelve years. This method consists essentially in the careful observation of the physiological effects produced upon dogs from the internal administration of the preparation of the drug under test. It is necessary in selecting the test animals to pick out those that are easily susceptible to the action of *Cannabis*, since dogs as well as human beings vary considerably in their reaction to the drug. Also, preliminary tests should be made upon the animals before they are finally selected for test purposes, in order that we may know exactly how they behave under given conditions. After the animals have been finally selected and found to respond to the standard test dose, 0.01 Gm. per kilo, they are set aside for this particular work, care being taken to have them well fed, well housed, and in every way kept under the best sanitary

conditions. Usually we have found it desirable to keep two or more of the approved animals on hand at all times, so there may not be delay in testing samples as they come in.

In applying the test, the standard dose (in the form of solid extract for convenience) is administered internally in a small capsule. The dog's tongue is drawn forward between the



teeth with the left hand, and the capsule placed on the back part of the tongue with the right hand. The tongue is then quickly released, and the capsule is swallowed with ease. In order that the drug may be rapidly absorbed, food should be withheld twenty-four hours before the test and an efficient cathartic given if needed.



Within a comparatively short time the dog begins to show the characteristic action of the drug. There are three typical effects to be noticed from active extracts on susceptible animals: first a stage of excitability, then a stage of incoordination, followed by a period of drowsiness. The first of these is so dependent on the characteristics of the dog used that it is of little value for judging the activity of the drug, while with only a few exceptions the second, or the stage of incoordination, invariably follows in one to two hours; the dog loses control of its legs and of the muscles supporting its head, so that when nothing occurs to attract its attention its head will droop, its body sway, and, when severely affected, the animal will stagger and fall, the intoxication being peculiarly suggestive and striking.

Experience is necessary on the part of the observer to determine just when the physiological effects of the drug begin to manifest themselves, since there is always, as in the case of many chemical tests, a personal factor to be guarded against. When an active extract is given to a susceptible animal, in the smallest dose that will produce any perceptible effect, one must watch closely for the slightest trace of incoordination, lack of attention, or drowsiness. It is particularly necessary for the animals to be confined in a room where nothing will excite them, since when their attention is drawn to anything of interest the typical effects of the drug may disappear.

The influence of the test dose of the unknown drug is carefully compared with that of the same dose of the standard preparation administered to another test dog at the same time and under the same conditions.

Finally, when the animals become drowsy, the observations are recorded and the animals are returned to their quarters.

The second day following, the observations upon the two dogs are reversed, *i. e.* the animal receiving the test dose of the unknown receives a test dose of the known, and *vice versa*,

and a second observation is made. If one desires to make a very accurate quantitative determination, it is advisable to use, not two dogs, but four or five, and to study the effects of the test dose of the unknown specimen in comparison with the test dose of the known, making several observations on alternate days. If the unknown is below standard activity, the amount should be increased until the effect produced is the same as for the test dose of the standard. If the unknown is above strength, the test dose is diminished accordingly. From the dose of the unknown selected as producing the same action as the test dose of the standard, the amount of dilution or concentration necessary is determined. The degree of accuracy with which the test is carried out will depend largely upon the experience of the observer and the care he exercises.

Another point to be noted in the use of dogs for standardizing Cannabis is that, although they never appear to lose their susceptibility, the same dogs cannot be used indefinitely for accurate testing. After a time they become so accustomed to the effects of the drug that they refuse to stand on their feet, and so do not show the typical incoordination which is its most characteristic and constant action.

Previous to the adoption of the physiological test over twelve years ago, we were often annoyed by complaints of physicians that certain lots of drugs were inert; in fact some hospitals, before accepting their supplies of hemp preparations, asked for samples in order to make rough tests upon their patients before ordering. Since the adoption of the test we have not had a well authenticated report of inactivity, although many tons of the various preparations of Cannabis Indica have been tested and supplied for medicinal purposes.

At the beginning of our observations careful search of the literature on the subject was made to determine the toxicity of the hemp. Not a single case of fatal poisoning have we been able to find reported, although often alarming symptoms may occur.



A dog weighing 25 pounds received an injection of two ounces of an active U. S. P. fluid extract in the jugular vein with the expectation that it would certainly be sufficient to produce death. To our surprise the animal, after being unconscious for about a day and a half, recovered completely. This dog received not alone the active constituents of the drug but also the amount of alcohol contained in the fluid extract. Another dog received about 7 grammes of Solid Extract Cannabis with the same result. We have never been able to give an animal a sufficient quantity of a U. S. P. or other preparation of the Cannabis (Indica or Americana) to produce death.

There is some variation in the amount of extractive obtained, as would be expected from the varying amount of stems, seeds, etc., in the different samples. Likewise there is a certain amount of variation in the physiological action, but in every case the administration of 0.01 gramme of the extract per kilo body weight has elicited the characteristic symptoms in properly selected animals.

The repeated tests we have made convince us that Cannabis Americana properly grown and cured is fully as active as the best Indian drug.

Furthermore, we have placed out quantities of fluid extract and solid extract of Cannabis Americana in the hands of experienced clinicians, and from eight of these men, who are all large users of the drug, we have received reports which state that they are unable to determine any therapeutic difference between the Cannabis Americana and the Cannabis Indica.

## CONCLUSIONS

1. The method outlined in the paper, for determining the physiological activity of Cannabis Sativa by internal administration to especially selected dogs, has been found reliable when the standard dose of extract, 0.01 gramme per kilo body

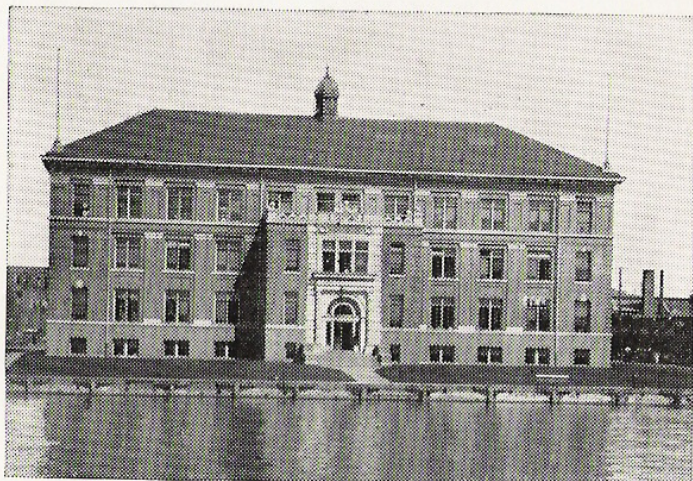
weight, is tested on animals, the effects being noted by an experienced observer in comparison with the effects of the same quantity of a standard preparation.

2. Cannabis Sativa, when grown in various localities of the United States and Mexico, is found to be fully as active as the best imported Indian-grown Cannabis Sativa, as shown by laboratory and clinical tests.





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